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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/774,332

02/06/2004

Nicholas A. Kotov

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5274

22206 7590 07/12/2007  
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EXAMINER

SCHLIENTZ, LEAH H

ART UNIT

PAPER NUMBER

1618

MAIL DATE

DELIVERY MODE

07/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.	Applicant(s)	
10/774,332	KOTOV, NICHOLAS A.	
Examiner	Art Unit	
Leah Schlientz	1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/6/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

This application claims priority as a continuation-in-part to 09/871,166, filed 5/31/2001 (now US 6,689,338), which claims benefit of 60/208,631 filed 6/1/2000. It is noted that the '166 and '631 applications provide support for metal sulfide or metal oxide nanoparticles, but the applications were thoroughly reviewed and support was not found for the full scope of the currently claimed "metal" or "metal chalcogenide" nanoparticles. The disclosure of metal oxide and sulfide species does not demonstrate that applicant envisaged the full scope of the metal or metal chalcogenide genres at the time of the '166 and '631 filings. As such the priority date for such terminology was considered by the examiner to be the filing date of the instant application, 2/6/2004.

### ***Double Patenting***

Claims 1 – 16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 11 of U.S. Patent No. 6,689,338. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to a bioconjugate comprising a radioactive nanoparticle covalently linked to at least one biological vector molecule. The nanoparticles of the instant application may be a metal or a metal chalcogenide, while those of the '338 patent may be a metal sulfide or oxide, such as  $\text{Bi}_2\text{S}_3$ , for example. The metal sulfide, or bismuth sulfide species of the '338 patent are

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encompassed by the currently claimed genus metal chalcogenide or bismuth chalcogenide. Accordingly, the claims are overlapping in scope and are obvious variants of one another.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 5, 6, 8, 10 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Buining *et al.* (WO 99/01766).

Buining discloses metal particles comprising a metal core and a silane shell, wherein said core comprises a metal selected from the group consisting of gold, silver, platinum, palladium, rhodium, etc, and combinations thereof. The particle may be 5 nm or lower in size. The particle may carry a covalently attached foreign molecule (abstract). For example, biotin or hapten may be conjugated to the gold particles (page 22). For application in cancer therapy, radioactive gold conjugates can be targeted to cancer cells (page 23, lines 15 – 16).

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Claims 1, 5, 6, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Ruoff *et al.* (US 5,547,748).

Ruoff discloses nanoencapsulates comprising metals encapsulated inside multilayered polyhedral shells of carbon (abstract). Nanoencapsulates of metals (e.g. radioisotopes) used in radiation therapy (such as yttrium) may be generated and introduced into the body. The surface of these nanoencapsulates may be derivatized in order to localize the radiation to a selected tissue, organ or cell type (column 13, lines 49 – 53).

Claims 1, 5, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Hainfeld *et al.* (US 5,521,289).

Hainfeld discloses small organometallic probes comprising a core of metal atoms bonded to organic moieties. The metal atoms are gold, silver, platinum, or combinations thereof (abstract). The organometallic clusters or colloids are covalently bonded to antibodies, avidin or streptavidin, etc. (column 2, lines 50 – 55). For therapeutic applications, radioactive gold may be employed (see column 5, line 65 – column 6, line 28).

Claims 1 – 3, 5 – 7, 10 – 12 and 14 – 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Tomalia *et al.* (US 2006/0177376).

Tomalia discloses core/shell structures having a core such as Au, Ag, CdSe/Zns, CdTe/CdS, CdTe/ZnS, etc. and a dendritic shell (paragraphs 0042 – 0043). The

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quantum dot-codendritic shell structure may be used for targeted delivery with antibody attachments, receptor directed targeting groups such as folic, biotin/avidin, etc. (paragraph 0056). The core-shell structures may contain radioactive materials (paragraph 0055).

Claims 1, 6 and 8 – 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Hainfeld *et al.* (6,818,199).

Hainfeld discloses metal nanoparticles useful for enhancing the contrast of x-rays or other radiation sources. The metal nanoparticles have a core composed of gold, platinum, palladium, etc, and have a material on the surface layer such as an antibody, peptide, drug, etc. Either the surface layer or the metallic core may include a radioactive isotope (column 5, lines 1 – 9).

### ***Conclusion***

No claims are allowed at this time.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leah Schlientz whose telephone number is 571-272-9928. The examiner can normally be reached on Monday - Friday 8 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LHS



SREENI PADMANABHAN  
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